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CURRENT LITERATURE

BOOK REVIEWS

Physiological education

In putting out the second edition of his laboratory course in plant physiology,[1] Professor GANONG directs attention to its threefold purpose in these words:

> First, it aims to lead students through a good laboratory course in plant physiology. Second, it seeks to provide a handbook of information upon all phases of plant physiology having any educational interest. Third, I venture to hope that it may find service as a guide to self-education by ambitious teachers or students. . . . . The book is not a compendium of physiological knowledge, nor yet, except incidentally, a handbook of investigations; but it is a guide to the acquisition of a physiological education. It is designed as a contribution to educational economy, and as such I wish it to be judged.

No one who examines the work can fail to see that it fulfils the threefold design of its author, so far as is compatible with success in making it, what it distinctly is, a contribution to educational economy, and by no means the first that Professor GANONG has produced. The strong pedagogical spirit which runs through the book is suffused by the even stronger scientific spirit, and the combination will make it of the highest service to teachers, as well as to those who, without other guidance, seek to gain a first-hand knowledge of plant physiology.

It must be pointed out that the book plans vastly more work than can be allotted to any elementary course in plant physiology in colleges. In the collateral lines of reading and inquiry that it suggests, there is opportunity for some years of labor, and for acquiring a wide knowledge of certain topics. Doubtless the author had it in mind that it is far better to err in this direction than to leave the student with the false notion that the book presents fully the whole subject. But a less informed and considerate teacher might heedlessly use such assignments to overburden seriously the conscientious student.

If, however, a self-taught student had this book alone as his guide, his knowledge of plant physiology might not be well balanced, because the pedagogical value of different parts of the subject, and hence the attention paid to them by the author, are not always proportionate to their importance. Thus, little more than 20 pages are devoted to the phenomena of irritability, and about an equal number to growth, while in both cases a considerable part of this is occupied by the description of apparatus. On the other hand, a little more than 20 pages is given to transpiration alone, and nearly twice as much to photosynthesis. While this allotment may be defended on pedagogical grounds, it is not clear that it is justifiable from the standpoint of the student or of the subject. Obviously, the author expects that by lectures or other reading and experimentation such inequalities are to be corrected.

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[1] GANONG, W. F., A laboratory course in plant physiology. 8vo. pp. vi+265. *figs. 68.* New York: Henry Holt & Co. 1908. $2.00.

One very helpful feature for the teacher is that various apparatus and methods of conducting experiments are either described in full or are referred to, so that they may be available. In most cases, however, it will be found that the method adopted in the book is clearly the most suitable for the elementary student, taking all things into consideration.

Much of the "normal apparatus," devised by Professor GANONG and now put upon the market, is highly convenient and useful. In some cases, however, it is doubtful whether the game is worth the candle, e. g., in the quantitative determination of transpiration; and often laboratory funds are more limited than the time of the student.

As to the particular course outlined in this guide, one must inquire whether, from the point of view of convenience, training, and knowledge acquired, the selection of experiments is the best that could be made, and whether appropriate attention is paid to the various topics. On these matters each teacher will have to form his own conclusion, because his own attitude toward the whole subject, and the special conditions under which his work is carried on, must be determining factors. Consequently, it is possible that no two would precisely agree. But we fancy there will be small disagreement with the statement that no one will fail to find this book of the greatest service in conducting elementary courses, even if he hesitates to adopt it formally as a laboratory manual; and for that purpose it is, in many respects, far and away the best that has appeared in any language.—C. R. B.

MINOR NOTICES

Javanese fresh-water algae.—Various works have contributed to make known the algal flora of Java, of which the nearly simultaneous ones by DE WILDEMAN and by GUTWINSKI are best known and most comprehensive. BERNARD, though not a professed phycologist and modestly decrying the value of his work, adds very materially to the knowledge of the Protococcaceae and Desmidiaceae, in a rather voluminous paper published by the Department of Agriculture of the Dutch Indies.[2] Beginning the work of collecting almost accidentally, the beauty and interest of the unicellular forms and the necessity of examining them in the living condition determined his study of them. In an introduction (45 pp.) the author, after giving briefly the history, bibliography, methods of study and collection, and the peculiarities of the localities explored, discusses the variations, adaptations, and cosmopolitanism of certain forms, states his attitude on nomenclature, and sets forth in tabular statistical form the various contributions to his subject. From this it appears that there are now known 230 species and varieties of these

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[2] BERNARD, CH., Protococcacées et Desmidiacées d'eau douce, recoltées à Java et decrites par C. B. Imp. 8vo. pp. 250. *pls. 16.* Batavia: Landsdrukkerij. 1908.